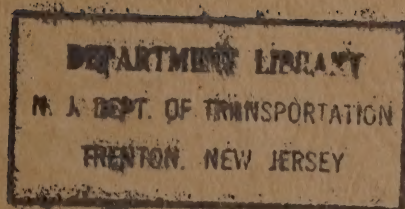


STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION



STICKEL BRIDGE TO I-95

1967



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
FAIRFIELD, N.J.

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State of New Jersey
DEPARTMENT OF TRANSPORTATION

DAVID J. GOLDBERG, COMMISSIONER
TRENTON 08625

DISTRIBUTION OF FINAL ENGINEERING REPORT

ROUTE I-280

DATE 3-14-67

LOCATION - STICKEL BRIDGE - HARRISON TO ROUTE I-95 KEARNY

HUDSON COUNTY

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Keith Rosser
Keith Rosser
Director of Planning

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March 2, 1967

Mr. Keith Rosser
Director, Division of Planning
New Jersey Department of Transportation
1035 Parkway Avenue
Trenton, New Jersey 08625

Re: Interstate Route 280
Stickel Bridge to I-95
Location Report

Dear Mr. Rosser:

We are pleased to transmit herewith a Location Report for Interstate Route 280 in Hudson County in accordance with Phase A of our Engineering Services Agreement dated January 19, 1965.

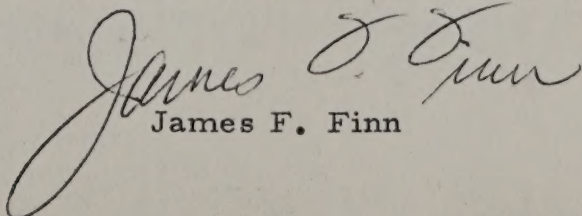
This report covers our studies for the location of Route I-280 from the Stickel Bridge in East Newark eastward through the Town of Harrison to Route I-95 (New Jersey Turnpike) in Kearny, all in Hudson County, a distance of 2.3 miles. The estimated cost of this 2.3 miles is approximately \$16,300,000.

We have also performed additional detailed studies, including the Stickel Bridge and Newark Turnpike interchanges and alignment through the freight yards of the Erie-Lackawanna Railroad. These studies indicate that an additional \$2,800,000 will be required to provide desirable interchange facilities.

We wish to express our appreciation to the personnel of the New Jersey Department of Transportation, particularly Mr. S. G. Link, Supervising Engineer, for their guidance and cooperation in the preparation of this report.

Very truly yours,

Howard, Needles, Tammen & Bergendoff


James F. Finn

Enclosure

cc: Mr. James F. Schuyler

ALEXANDRIA, VIRGINIA

AUGUSTA, MAINE

BOSTON, MASSACHUSETTS

CLEVELAND, OHIO

DALLAS, TEXAS

FAIRFIELD, NEW JERSEY

HARRISBURG, PENNSYLVANIA

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DEPARTMENT
1000 PARKWAY AVENUE
TRENTON, NEW JERSEY 08625

HOWARD NEEDLES TAMMEN & BERGENDOFF

CONSULTING ENGINEERS

305 KENNEDY AVENUE, SUITE 100, NEW JERSEY 08602

March 2, 1967

Mr. Keith Rosser
Director, Division of Planning
New Jersey Department of Transportation
1000 Parkway Avenue
Trenton, New Jersey 08625

Re: Interstate Route 280
Schickel Bridge to I-95
Location Report

Dear Mr. Rosser:

We are pleased to transmit herewith a Location Report for
Interstate Route 280 in Hudson County in accordance with the
Engineering Services Agreement dated January 19, 1965.

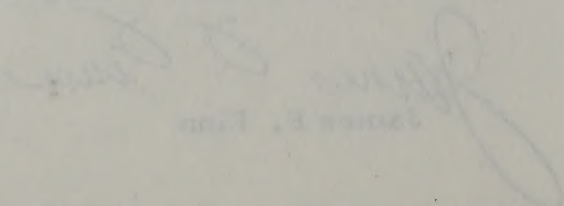
This report covers our studies for the location of Route 280
from the Schickel Bridge in East Newark eastward through the Town of Harrison
to Route I-95 (New Jersey Turnpike) in Newark, all in Hudson County, a distance
of 2.5 miles. The estimated cost of this study is approximately \$10,000.

We have also performed additional detailed studies, including
the Schickel Bridge and Newark Turnpike interchange and alignment through
the freight yards of the Erie-Lackawanna Railroad. These studies indicate that
an additional \$2,500,000 will be required to provide certain interchange
facilities.

We wish to express our appreciation to the personnel of the
New Jersey Department of Transportation, particularly Mr. E. C. Lisk,
Superior Engineer, for their guidance and cooperation in the preparation of
this report.

Very truly yours,

Howard, Needles, Tammen & Bergendoff


James E. Lisk

cc: Mr. James F. Schuyler
Essex

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DESCRIPTION

The first part of our Agreement with the New Jersey State Highway Department, presently called the New Jersey State Department of Transportation, called for a preliminary location study of the above mentioned portion of Interstate Route 285 which was to include: a) a viaduct scheme along the railroad, b) an at-grade scheme along the railroad, and c) an alignment through farmland. Additional studies, also called for in our Agreement, were made in critical areas along the Preferred Alignment.

INTRODUCTION

Interstate Route 280 is a part of the Federal Aid Interstate System of Highways. It is intended to serve as an intra-state link between Interstate Route 80 in Morris County and Interstate Route 95 (New Jersey Turnpike) in Hudson County. When completed, it will serve the heavily populated corridor through the Oranges and the City of Newark.

This report summarizes the results of an engineering study to recommend a preferred alignment for a portion of Interstate Route 280 from the vicinity of the Stickel Bridge to Interstate Route 95, a distance of approximately 2.3 miles, through the Towns of East Newark, Harrison and Kearny, all in Hudson County.

DESCRIPTION

Scope

The first part of our Agreement with the New Jersey State Highway Department, presently called the New Jersey State Department of Transportation, called for a preliminary location study of the above-mentioned portion of Interstate Route 280 which was to include: a) a viaduct scheme along the railroad, b) an at-grade scheme along the railroad, and c) an alignment through Harrison. Additional studies, also called for in our Agreement, were made in critical areas along the Preferred Alignment.

Procedure

Initial studies covered a broad area as far west as the proposed I-280 - Route 75 Interchange in the City of Newark. A preliminary outline report covering three corridors--designated in this report as 'Northern', 'Sixth Avenue' and 'Red'--was submitted to the Department in June, 1965. Meetings were held with the Department and the Bureau of Public Roads concerning the above-mentioned corridors as well as two additional corridors--Central Avenue and Orange Street. The Department subsequently informed us that the Stickel Bridge would be used for the crossing of the Passaic River by I-280.

Studies of alternative alignments were then made within the "Red" corridor (along the railroad) and the "Blue" corridor (through the middle of Harrison). The results were reviewed with the Department. Plans covering all alternatives were submitted to the Department and the Bureau of Public Roads in March, 1966. Meetings were then held with each of the affected municipalities and counties. A public hearing was held in August, 1966 and studies were made of the pertinent comments received.

Additional studies were made along the Preferred Alignment in three areas: 1) the Stickel Bridge Interchange, 2) through the Erie-Lackawanna Railroad yards, and 3) the interchange of I-280, I-95 and future Route 85 at Newark Turnpike.

PREFERRED ALIGNMENT

The Preferred Alignment lies within the Red corridor and utilizes the embankment construction alternative. I-280 would generally be carried on an earth fill and cross over local streets on independent structures. A short viaduct is proposed from the west side of Fourth Street to the east side of Fifth Street.

Beginning at the east end of the Stickel Bridge in the vicinity of Passaic Avenue, the boundary line between the Town of East Newark and the Town of Harrison, the Preferred Alignment proceeds eastward, curving to the south, approximately parallel to and on the north side of the Erie-Lackawanna Railroad. It then crosses over Hamilton Street and proceeds southeast, crossing over Harrison Avenue. It continues to the southeast along the railroad, curving to the east as it passes between the railroad and the Radio Corporation of America complex near the intersection of Fourth Street and Essex Street.

From this point, the alignment lies between the railroad and Essex Street to a point approximately opposite Seventh Street where it begins a gentle curve to the northeast staying parallel and adjacent to the southern limits of several large industrial properties. It proceeds to the northeast through the partially dismantled freight yard of the Erie-Lackawanna Railroad and crosses over the freight spur track to the east. It then curves in a northerly direction crossing over Newark Turnpike where it meets the proposed New Jersey Turnpike.

Interchanges

Interchange locations have been studied and it is recommended that the interchange of traffic between the Interstate Route and the local streets be provided at the western end of the project in the vicinity of the Stickel Bridge and at the eastern end of the project at Newark Turnpike. Supplementary information concerning interchanges is given later in the report under "Additional Studies."

ALTERNATIVE ALIGNMENTS

The following alternatives were also studied.

Red Corridor

A. Partial Viaduct. Construction on viaduct would be used from the east end of the Stickel Bridge to Fifth Street. From Fifth Street to Newark Turnpike, the alignment would be the same as the Preferred Alignment.

B. Full Viaduct. Viaduct construction would be used from the Stickel Bridge to a point on the easterly side of the Erie-Lackawanna Railroad freight spur track.

Blue Corridor

The Blue corridor begins at the Stickel Bridge and proceeds eastward on a gentle curve to the north. It generally utilizes the complete block between Hamilton and William Streets through Harrison and parts of Kearny. The corridor alignment is direct and runs almost due east to a point east of Sandford Avenue in Kearny where there is a gentle curve to the north in

order to avoid several industrial buildings. From this point, the corridor continues directly east to the proposed New Jersey Turnpike and Newark Turnpike.

The three alternative construction schemes are as follows:

A. Excavation. From the Stickel Bridge, I-280 would descend to an elevation approximately 20 feet below the existing ground and cross under Second, Third, Fourth and Fifth Streets. I-280 would then rise in the vicinity of Patterson Street and cross over Davis, Kingsland and Schuyler Avenues, and the Erie-Lackawanna Railroad freight spur track.

B. Embankment. From the Stickel Bridge, I-280 would be constructed on an earth fill approximately 20 feet above the local streets which would be bridged on independent structures.

C. Viaduct. Construction on viaduct would be used from the east end of the Stickel Bridge to Sandford Avenue in Kearny. Embankment construction would be used east of this point and a short structure would be used to cross over the Erie-Lackawanna Railroad freight spur track.

ADDITIONAL STUDIES

Stickel Bridge Interchange. For the purposes of the corridor cost comparisons, an interchange concept was used for both the Red and Blue corridors similar to that shown in the 1965 Estimate of the Cost of Completing the Interstate System, Section 104(b)5. Additional interchange studies were subsequently made and reviewed with the Department.

One of the more important requirements of this interchange is to provide suitable access from I-280 eastbound to the industrial area on the south side of the Erie-Lackawanna Railroad and west of Fourth Street. This ramp is indicated between the proposed I-280 alignment and the railroad and ties into a local street. Alternatives were also investigated, such as providing ramp crossings over the Erie-Lackawanna Railroad tracks and/or constructing service roads on the south side of the railroad. These were not considered feasible due to a combination of prohibitive cost and additional dislocation of dwellings.

At the public hearing, officials of the Town of Harrison requested the Department to provide access to and from the east at the Stickel Bridge Interchange. They felt that this would provide access for the industrial area previously mentioned and ease the traffic burden on Harrison Avenue. Subsequent traffic counts provided by the Department indicate a desire for this movement.

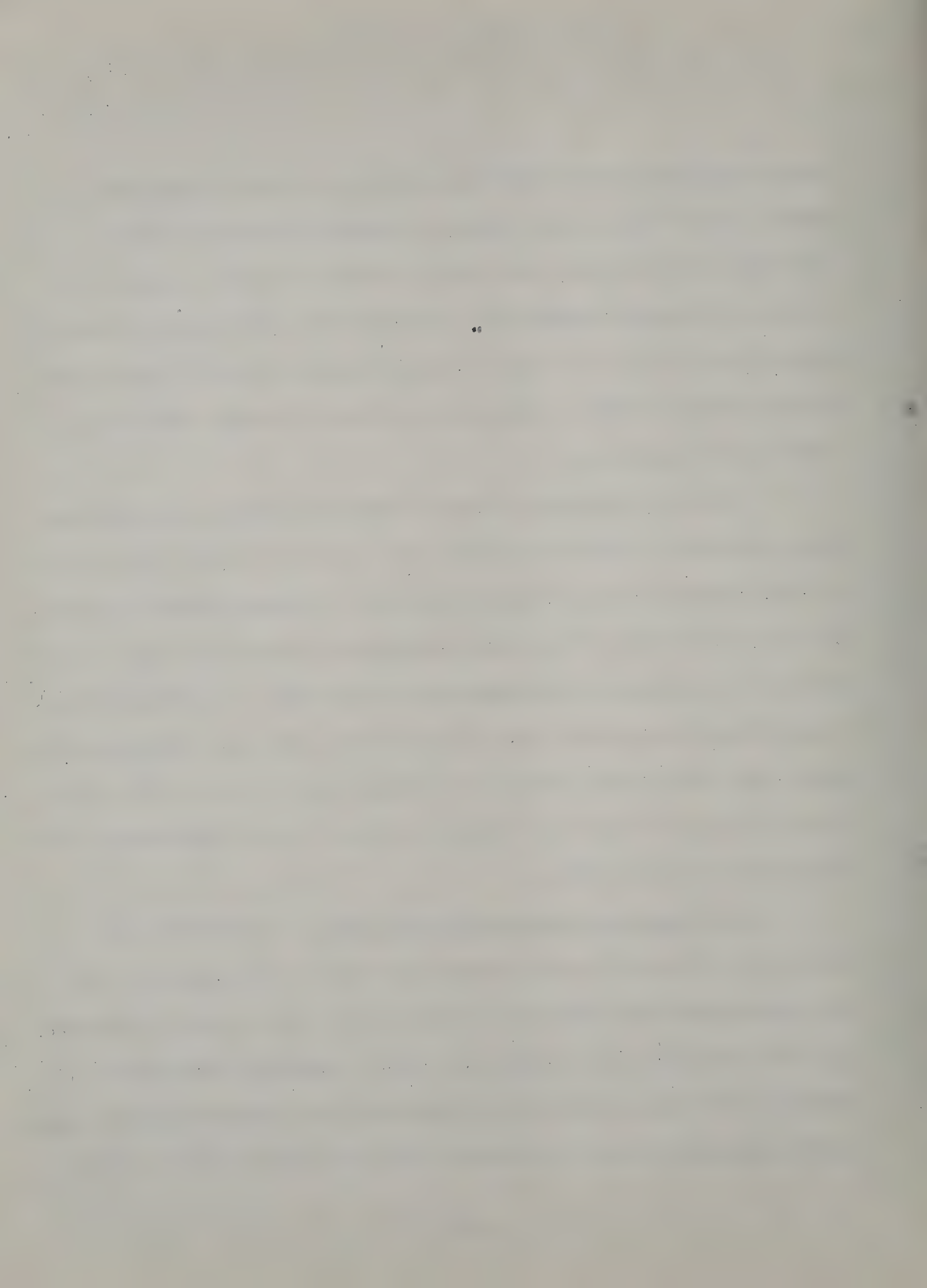
During various discussions concerning the interchange, the Department has expressed a desire to eliminate left turn movements by interchange traffic across Harrison Avenue. We are in agreement with this concept and have reflected this thinking in these additional studies.

Newark Turnpike Interchange. For the purposes of the corridor cost comparisons, an interchange concept similar to that shown in the 1965 Estimate of the Cost of Completing the Interstate System, Section 104(b)5

was used for both the Red and Blue corridors. A study of projected traffic counts for this facility indicate a warrant for separate turning movements which eliminate left turns on Newark Turnpike. Also, the crossing of Newark Turnpike is in an undesirable area from the standpoint of safety in that it is near a sharp horizontal curve. It was decided that we should consider a realignment of Newark Turnpike within the limits of the interchange.

We were subsequently informed that the Department was studying a new route which would leave I-280 in the vicinity of Newark Turnpike and proceed eastward, along the general corridor of existing Newark Turnpike, to the Holland Tunnel. This route--designated as Route 85--was to be considered in the planning of the interchange configuration. A configuration has been developed whereby the basic cloverleaf for I-280 and I-95 was held with I-280 split into two independent roadways south of Newark Turnpike to allow for the future westbound Route 85 to connect with I-280 westbound within the median area of I-280.

Erie-Lackawanna Railroad Freight Yards. Studies were made to determine the most suitable location for the Preferred Alignment within the freight yards from Station 157 to Station 190. The railroad is planning to attract industry to the freight yard which is partially dismantled at present. Two basic conditions were studied: 1) an alignment adjacent to the industrial buildings on the north side of the freight yard and, 2) an



alignment immediately adjacent to the main line of the Erie-Lackawanna Railroad on the southern edge of the freight yard.

Location 1 appears to be the most advantageous from the point of view of remaining land, cost, highway safety and relocation of rail facilities. The one disadvantage of this location is that public access must be provided to the site. This could be provided by using Boylon Avenue and then constructing an access road along the freight spur track to the proposed I-280 structure over this track. Provision would have to be made for this access road to pass under the proposed railroad structure.

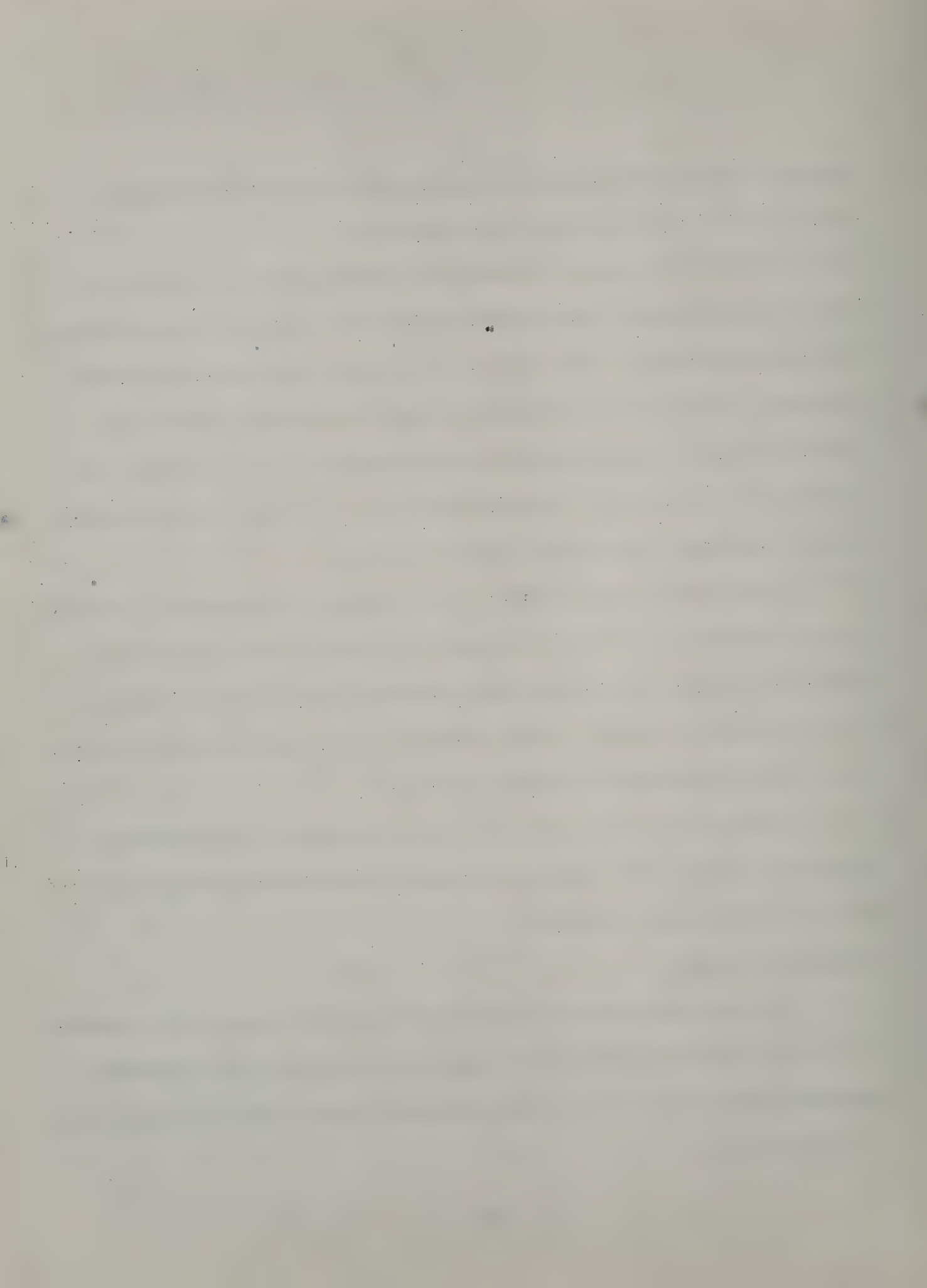
Location 2 is also suitable for development of the property. However, it has a disadvantage in that it separates the property from the main line of the Erie-Lackawanna Railroad and complicates track relocation which is required in either location. It also provides a poor location for the structure over Frank's Creek and the freight spur track.

Based on the above, we have shown the location of the Preferred Alignment adjacent to the southern boundary of the industrial property as described above under Location 1.

PUBLIC HEARING

The following comments received at the public hearing were studied:

1. The Town of Harrison suggested revising the I-280 alignment to coincide with (on viaduct) the Erie-Lackawanna Railroad from Harrison Avenue to Fifth Street.



It is our opinion that this suggestion is impractical because of prohibitive cost and the difficulty of providing ramp connections from the relatively high elevation of the viaduct to the local streets.

2. The Town of Harrison stated that they are absolutely opposed to dead ending any streets because of the I-280 construction. All streets presently bridged by the Erie-Lackawanna Railroad should be kept open.

Our study of various interchange alternatives at the Stickel Bridge indicates that Cleveland Street is in a critical area and will almost certainly have to be cut off in order to provide a reasonable interchange configuration. The ability to keep Warren Street open for through local traffic will depend upon the interchange scheme and local street traffic pattern which will finally be adopted. We feel that a traffic count on the existing streets crossing under the Preferred Alignment should be made in order to make a reasonable evaluation of traffic patterns during the preliminary stages of the final design phase.

3. The City of Newark, represented by their City Planner, suggested that provision should be made for a direct route from downtown Newark in the vicinity of Saybrook Place to I-280 in Harrison.

Various schemes for a Downtown Newark Connector have been studied during our preliminary corridor evaluations. We feel that a connection is possible, but at considerable cost.

4. Several business interests in Harrison, as well as the Town Engineer, stated that consideration should be given to utilizing a viaduct type of construction from the Stickel Bridge to Fifth Street so that parking could be made available under the viaduct.

Based on the additional cost of the partial viaduct scheme--approximately \$6,000,000--it is felt that this type of construction is not warranted.

DESIGN CRITERIA

General

A study of the Department's traffic projections indicates the need for a typical section consisting of three lanes of traffic in each direction with continuous outer shoulders 12 feet wide and inner shoulders 3 feet wide. A minimum median width of 8 feet is proposed from the Stickel Bridge to a point east of Fifth Street. From this point to the east, the median width would increase to 16 feet minimum. It is anticipated that a much wider median will be used in the area between the Erie-Lackawanna Railroad freight spur track and Newark Turnpike in order to accommodate future Route 85.

A design speed of 60 m.p.h. has been used for setting horizontal and vertical alignment with the exception of the Stickel Bridge approach which is 50 m.p.h. A minimum radius of 1,600 feet has been used except at the Stickel Bridge where the minimum radius is 1,000 feet. Maximum profile grades are 3% in the Red corridor and 3.5% in the Blue corridor.

There are several areas of restrictive horizontal clearances which should be noted. One such area is between the RCA complex and the Erie-Lackawanna Railroad at Station 135. Another area is at Station 155 where provision must be made for a freight siding to service several industries to the north.

Geology

The general soils and geological information was obtained from the following reports:

1. "Engineering Soils Survey of New Jersey, Report No. 4, Bergen and Hudson Counties".
2. "Bedrock Map of the Hackensack Meadows"
New Jersey Geological Survey.
3. "Geological Map of New Jersey" by Lewis & Kummel.
4. Preliminary results of Boring Contract A.

Additional information was obtained from the U. S. Army Corps of Engineers, the State of New Jersey, Department of Transportation (Bureau of Soils), and our own files.

The area of this project consists of glacial and recent soil deposits overlying bedrock of the Triassic Series. The bedrock occurs at depths ranging from 57 feet at the Stickel Bridge to a maximum depth of 295 feet just east of Fifth Street. From this point to the east end of the project, the depth to bedrock generally ranges from 90 to 130 feet.

The bedrock, of the Brunswick Formation, consists of soft shale with sandstone beds.

The soils overlying bedrock are varied. In general, they consist of the following in ascending order: a layer of glacial drift, glacial lake deposits, stratified glacial outwash, tidal marsh deposits, and man-made fill and boulders.

The glacial drift consists of a mixture of sand, gravel, clay and boulders. The glacial outwash deposits consist of sands and silt. The tidal marsh deposits consist of soft organic silt and peat. The man-made fill ranges from garbage to all types of soil.

The foundation conditions are better in the western half of the project since the overlying soils consist only of glacial outwash and fill deposits. Less favorable conditions are found on the eastern portion where the varved clays, tidal marsh, and garbage fills exist in addition to the glacial outwash and fill deposits.

It is estimated that some structures may be founded on short piles carried to the firm soils or possibly to bedrock in the area where it is shallow, adjacent to the Passaic River. It will be possible to found some structures on soil bearing footings. All roadways will be constructed on embankments above the existing ground.

In the eastern portion of the project, the tidal marsh deposits near the surface can be expected to cause significant settlements of these embankments and possible stability problems. Some settlements of embankments are expected due to the varved glacial lake deposits. However, based on

detailed studies for the proposed New Jersey Turnpike Widening to the east of the project area, settlement problems due to these varved glacial lake deposits will be of secondary concern.

It is expected that embankment foundation treatment will be required to minimize settlement and stability problems in the tidal marsh deposits. Possible methods of treatment are removal by excavation or preconsolidation by surcharge.

It is expected that the settlements in the glacial lake deposits can be eliminated or minimized by constructing the embankment and allowing it to settle for approximately 12 months prior to constructing the drainage facilities and pavement.

Large settlements can be expected in the garbage fill areas. It may be possible to treat these by surcharge, although complete removal by excavation would be the more positive treatment. Additional investigations, including the results of laboratory tests, will be required to determine final treatment.

Embankment construction problems are not expected in the western portion of the project since there are no serious compressible deposits, i.e., the tidal marsh, varved clay and garbage fills.

COST ANALYSES

The cost estimate for this project has been prepared following the methods established by the U. S. Department of Commerce, Bureau of Public Roads, for estimating the Interstate Highway System.

A Road User Benefit Analysis has been prepared which compares the Red and Blue corridor alternatives to Harrison Avenue as a minimum basic condition.

It should be noted that the cost estimates have been developed for the presently existing topographic conditions. The easterly end of the study area is located on or adjacent to active garbage disposal sites and there is a significant danger of incurring additional construction costs unless some means are taken to either protect or acquire the necessary right of way for the I-280 construction.

An estimate of cost for the Stickel Bridge and Newark Turnpike Interchanges was also prepared as part of our additional studies of the Preferred Alignment. We estimate that these interchanges would add approximately \$1,800,000 and \$1,000,000 respectively to the cost of the Preferred Alignment for the configuration shown on Sheets Nos. 10 and 11 of the plans. We feel that costs of a comparable magnitude would be encountered if similar concepts were applied to the Blue corridor.

Details of the cost estimate are listed at the end of the written portion of this report. Table No. 1 shows a cost comparison summary of the various corridor alternatives and a summary of results of the Road User Benefit Analysis. Table No. 2 gives a detailed cost breakdown for all alternatives.

CONCLUSIONS

It is our opinion that the two most important factors to be considered in evaluating the Red and Blue corridors are economics (engineering, right-of-way and construction costs) and the adverse effect to the community in terms of families displaced.

Cost comparisons indicate that the Preferred Alignment has a construction cost of approximately \$11.9 million and a right-of-way cost of \$4.4 million for a total of \$16.3 million as compared to the Blue corridor, excavation scheme, with a construction cost of \$8.5 million and a right-of-way cost of \$7.7 million for a total of \$16.2 million. There are approximately 100 families displaced in the Red corridor as compared to approximately 650 families in the Blue corridor.

Other location determinants which have been considered are as follows:

Replacement Housing. The Town of Harrison is a relatively old and settled community. There is very little new housing being constructed. It must be assumed that most of the families displaced would have to relocate out of the community which will create a financial hardship. Through inquiries to federal, state and local agencies, we have determined that there are no plans for an Urban Redevelopment program within the Blue corridor which would mitigate this situation.

Residential Character and Location; Esthetics. It is our opinion that the quality of the residential area traversed by the Red corridor is less desirable than that traversed by the Blue corridor. The homes along the Blue corridor, although old and modest, are neat and generally give evidence of being maintained. We feel that the Red corridor, particularly in view of its paralleling an existing railroad, will have the least harmful esthetic effect.

Public Utilities. The Red corridor will cause less disruption of existing utilities in that it is being carried over the existing street pattern while the Blue corridor, excavation scheme, requires a relocation of at least four local streets.

The Red corridor, in addition to normal disruption of local utilities, will require the protection or relocation of a 36 inch gas transmission pipe line, an underground telephone trunk line and, possibly, a 48 inch sanitary sewer line.

The Blue corridor, excavation scheme, in addition to normal disruption of local utilities, will require the relocation of a 36" gas line, 2 - 12" gas lines, 2 underground telephone trunk lines and, most significantly, the disruption of sanitary sewer lines due to the relocation of Second, Third, Fourth and Fifth Streets. A new interceptor sewer, if grades permit, or a forced main pumping system will be necessary.

Education and Disruption of School District Operations. The Red corridor passes immediately adjacent to the Chestachowa church and school. The Blue corridor is adjacent to the Harrison High School and the Washington elementary school.

Operation of Local Traffic During Construction. We feel that the Blue corridor would cause a greater disruption of local traffic patterns during construction due to the relocation of local cross streets. The Red corridor will require the relocation of railroad freight tracks.

Conduct and Financing of Government. The Blue corridor causes approximately twice as much loss of tax ratables as compared to the Red corridor. While this is not an insurmountable problem for the community, it is an additional burden which it must bear for a number of years.

Fire Protection. The Red corridor displaces an existing fire house which is avoided on the Blue corridor. The relocation of this building should not cause any serious problem.

Other location determinants which were not considered significant between alternatives include National Defense, Economic Activity, Employment, Recreation, Religious Institutions and Practices, Rights and Freedoms of Individuals, Maintenance of Highway and Other Transportation Facilities.

Summary.

It is our opinion that the long viaduct and short viaduct alternatives within the Red corridor and the viaduct alternative within the Blue corridor

are not reasonable in view of their high construction costs--approximately \$6-14 million more expensive than the Preferred Alignment.

The excavation alternative within the Blue corridor is approximately the same cost as the Preferred Alignment, has a more direct alignment, but causes a greater disruption of local traffic and utilities and displaces a significantly larger number of families. The embankment alternative within the Blue corridor is approximately \$1.0 million more expensive than the Preferred Alignment and also causes the dislocation of many families.

It is our conclusion that the Preferred Alignment is economically competitive with the Blue corridor excavation alternative and is significantly more desirable in view of its lesser impact to the community as outlined above.

We recommend that the Preferred Alignment--Red corridor, embankment scheme--be adopted for that portion of Interstate Route 280 from the Stickel Bridge eastward to I-95.

CORRIDOR COST SUMMARY

Type of Construction	<u>RED CORRIDOR</u>		<u>BLUE CORRIDOR</u>	
	Cost (Including Right-of-Way)		Cost (Including Right-of-Way)	
Embankment	\$16,343,000		\$17,338,000	
Excavation	-----		\$16,226,000	
Short Viaduct	\$22,375,000		-----	
Long Viaduct	\$31,447,000		\$28,772,000	

ROAD USER BENEFIT ANALYSIS

Type of Construction	<u>RED CORRIDOR</u>		<u>BLUE CORRIDOR</u>	
Embankment	3.0		3.8	
Excavation	---		4.1	
Short Viaduct	2.1		---	
Long Viaduct	1.4		2.1	

DETAILED COST ESTIMATE

BLUE CORRIDOR

RED CORRIDOR

Item Length - Miles	Viaduct	Embankment	Excavation	Long Viaduct	Short Viaduct	(Preferred) Embankment
	2.0	2.0	2.0	2,3	2.3	2.3
1. Preliminary Engineering	987	453	400	1,265	840	557
2. Right of Way	7,675	7,675	7,675	4,434	4,434	4,434
3. Clear & Grub; Demolition	70	70	67	28	44	44
4. Utility Adjustments	330	550	800	534	490	470
5. Grade & Drain; Minor Structures	2,272	3,521	2,729	611	2,722	3,316
6. Base; Surfacing; Shoulders	302	689	719	196	533	758
7. R.R. Grade Separations	225	225	214	0	218	218
8. Highway Grade Separations without Ramps	0	1,966	1,324	0	0	1,400
9. Interchanges, Complete	1,667	1,081	1,138	512	1,964	750
10. Other Bridges; Tunnels	13,266	0	0	21,285	9,273	1,934
11. Walls	0	0	100	0	84	1,156
12. Guardrail, Fencing, Lighting, Traffic Control	102	164	144	133	127	149
13. Roadside Improvement	46	101	105	17	81	111
14. All Other Items	2	6	70	91	10	14
15. Subtotal, Lines 3 to 14	18,282	8,373	7,410	23,407	15,546	10,320
16. Construction Engineering & Conting 10% of Line 15	1,828	837	741	2,341	1,555	1,032
17. Total Estimated Cost (\$1,000)	28,772	17,338	16,226	31,447	22,375	16,343

STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION



ROUTE



REPORT

NEW JERSEY TURNPIKE

MARGENDOFF

INDEX OF DRAWINGS

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2	Typical Sections
3	Corridor Locations
4 — 6	Corridor Details
7 — 9	Profiles
10 — 11	Preferred Corridor Topography
12	Interchanges
13	Soils Map

STATE OF NEW JERSEY



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STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION

INTERSTATE ROUTE



LOCATION REPORT

FROM THE STICKEL BRIDGE TO THE NEW JERSEY TURNPIKE

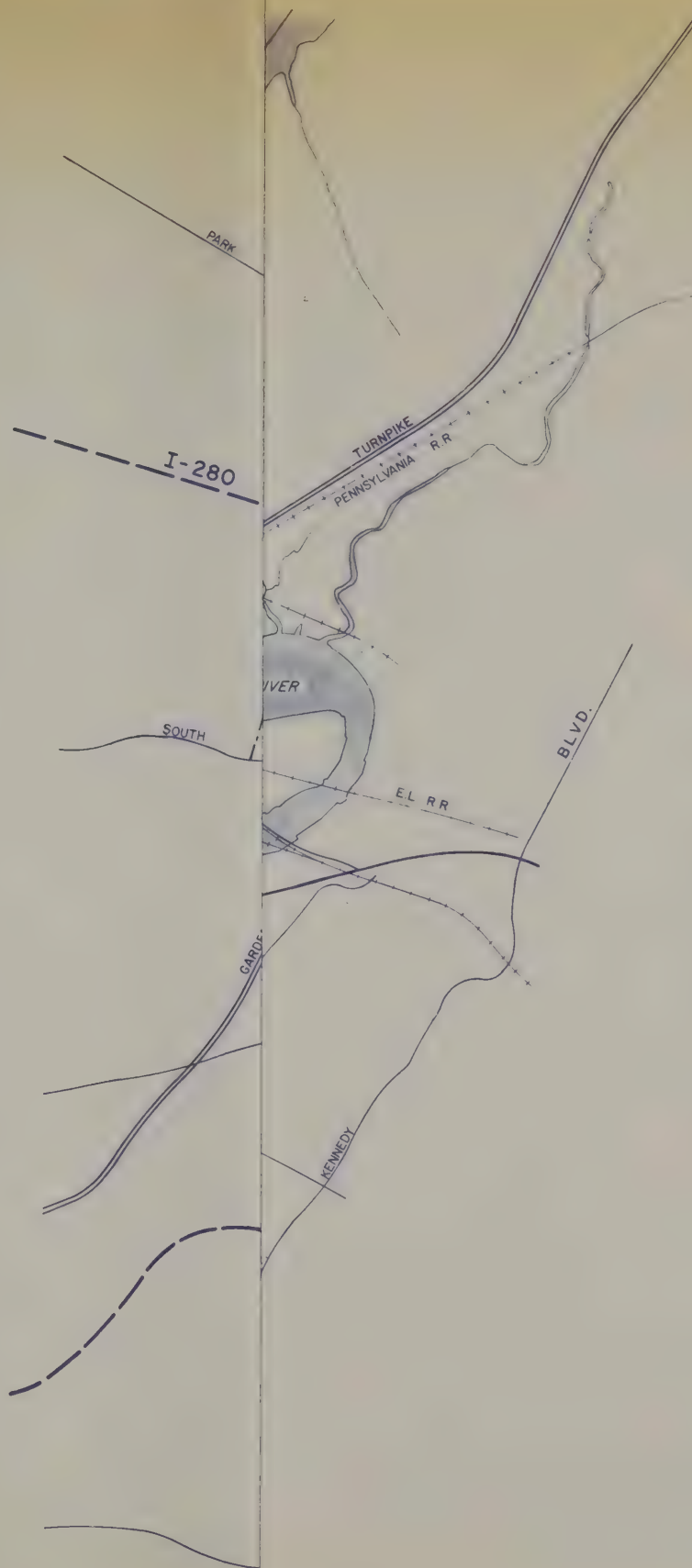
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consulting engineers
FAIRFIELD, N.J.

LEGEND

Buildings	
Rivers and Streams	
Swamp	
Railroad	
RDW. Line	
Top of Slope	
Bottom of Slope	

INDEX OF DRAWINGS

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—	Title Sheet
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2	Typical Sections
3	Corridor Locations
4-6	Corridor Details
7-9	Profiles
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12	Interchanges
13	Soils Map

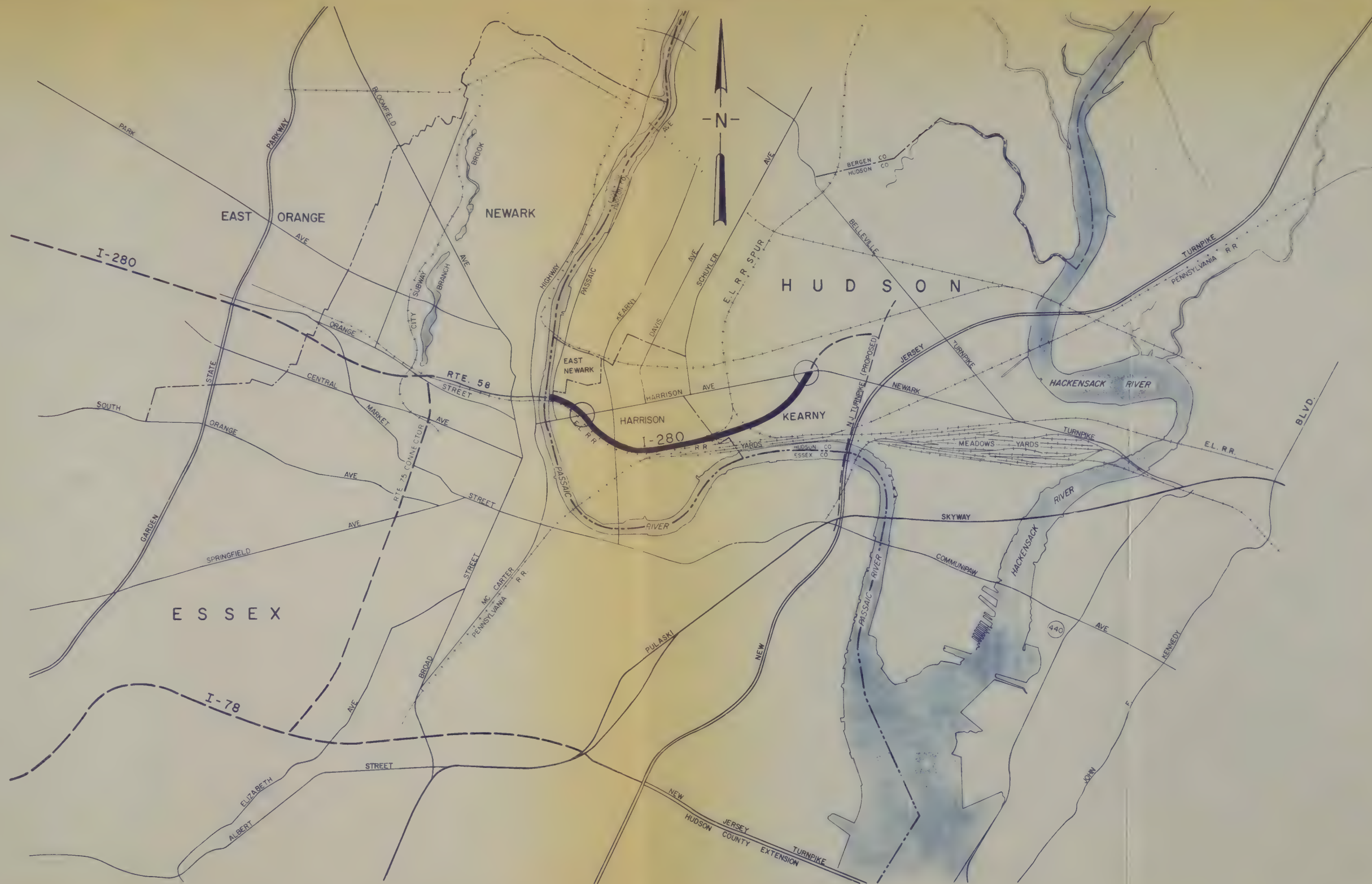


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INTERSTATE ROUTE 280 LOCATION REPORT
LOCATION MAP

SCALE 1" = 4,000'
DATE 1966

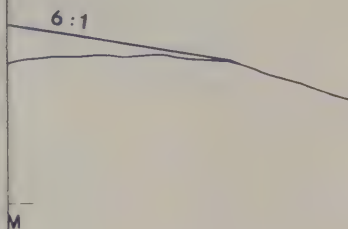
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LEGEND

- I-280 INDICATES PREFERRED ALIGNMENT
- INDICATES INTERCHANGE LOCATION

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INTERSTATE ROUTE 280 LOCATION REPORT LOCATION MAP	
SCALE 1" = 4,000' DATE 1966__	DRAWING NO. L__



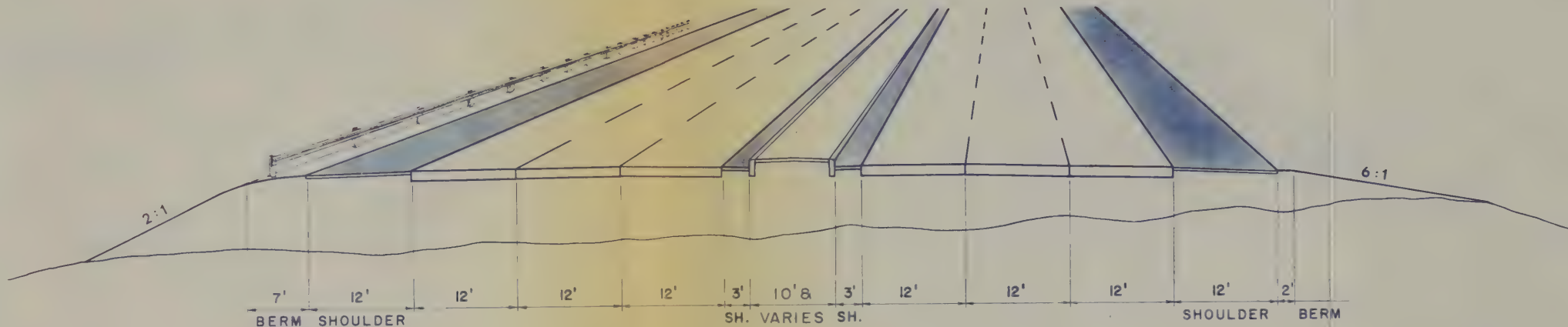
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TYPICAL SECTIONS

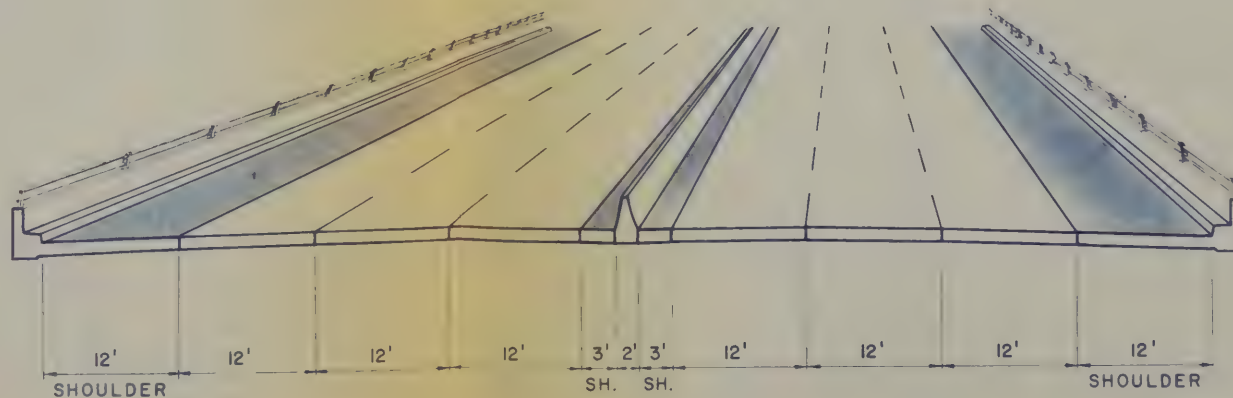
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DATE 1966

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2

TYPICAL SECTIONS



ROADWAY



BRIDGE

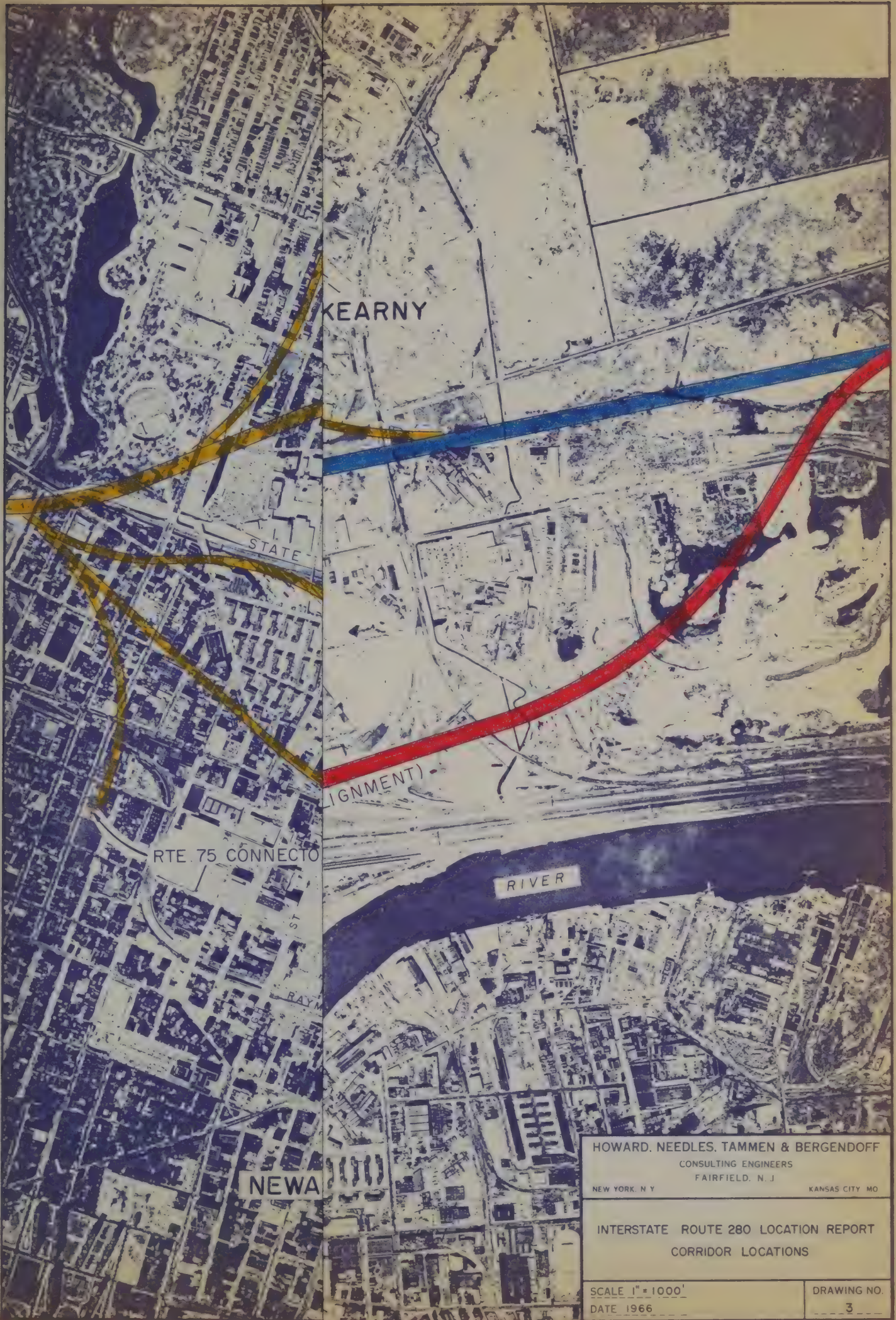
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TYPICAL SECTIONS

SCALE $\frac{1''}{6'} = 1' - 0''$
DATE 1966

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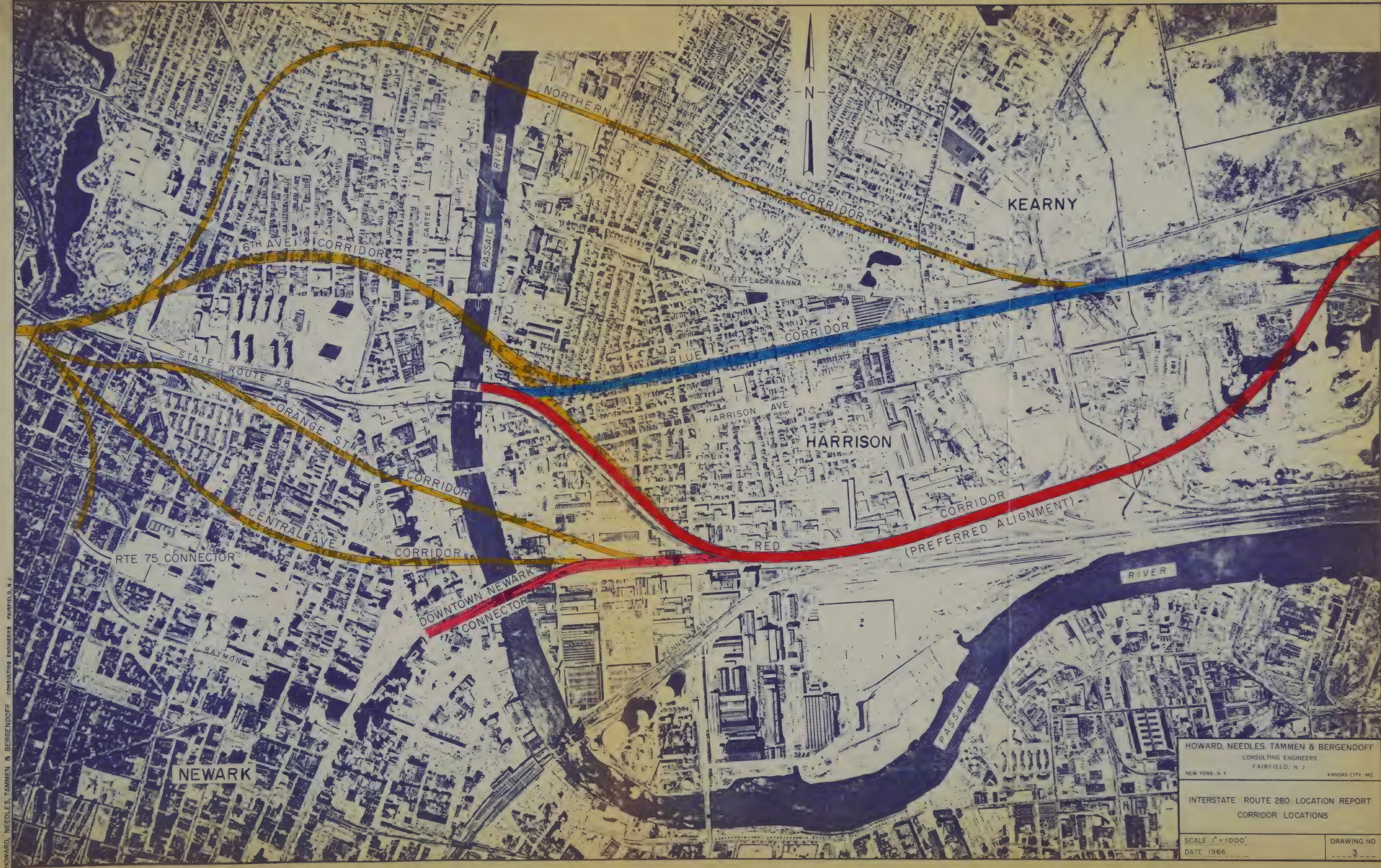


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INTERSTATE ROUTE 280 LOCATION REPORT
CORRIDOR LOCATIONS

SCALE 1" = 1000'
DATE 1966

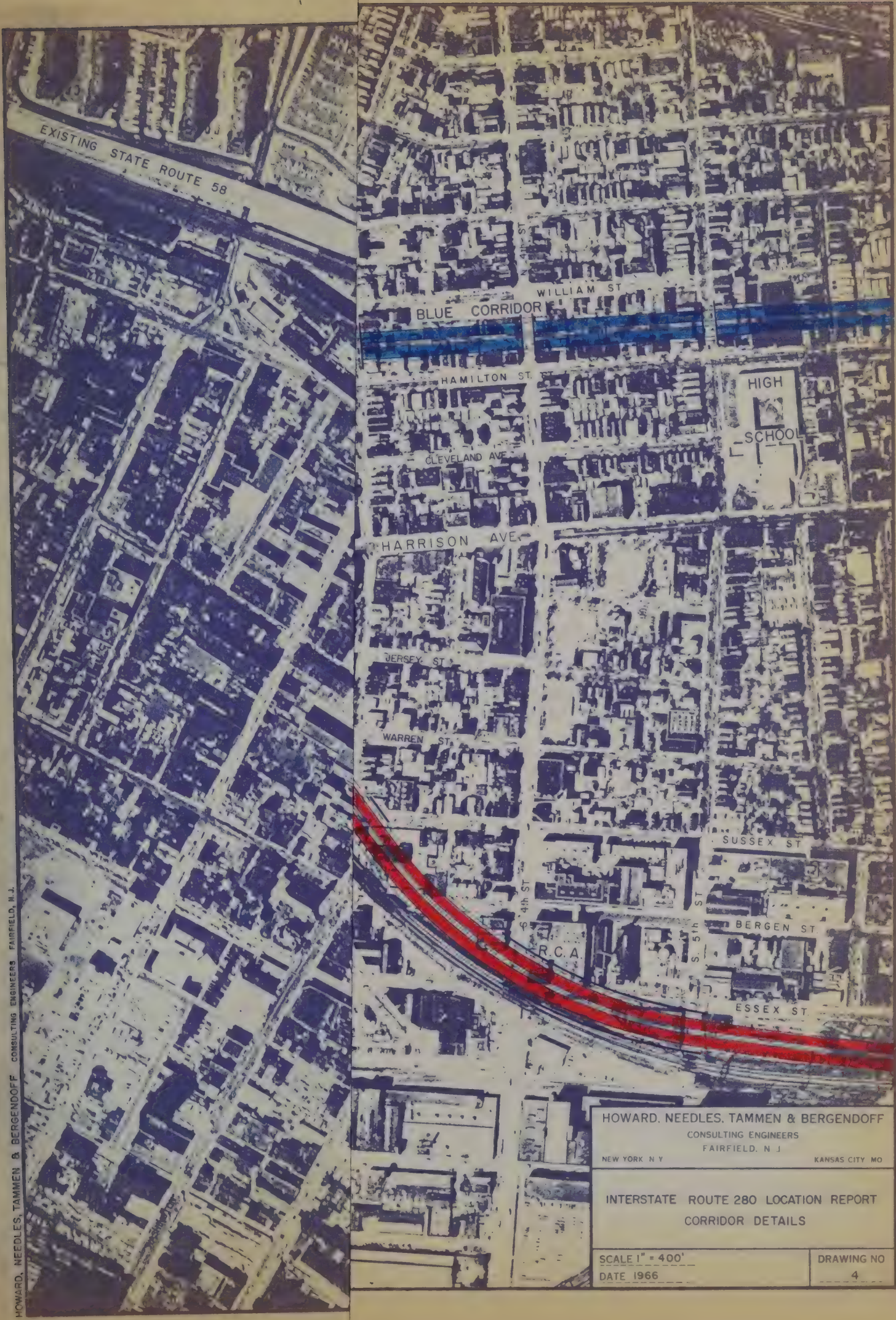
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CORRIDOR LOCATIONS	
SCALE 1" = 1000'	DRAWING NO.
DATE 1966	3

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CORRIDOR DETAILS	
SCALE 1" = 400'	DRAWING NO
DATE 1966	4



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INTERSTATE ROUTE 280 LOCATION REPORT CORRIDOR DETAILS	
SCALE 1" = 400' DATE 1966	DRAWING NO. 4



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CORRIDOR DETAILS

SCALE 1" = 400'
DATE 1966

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SCALE 1"=400'	DRAWING NO.
DATE 1966	5



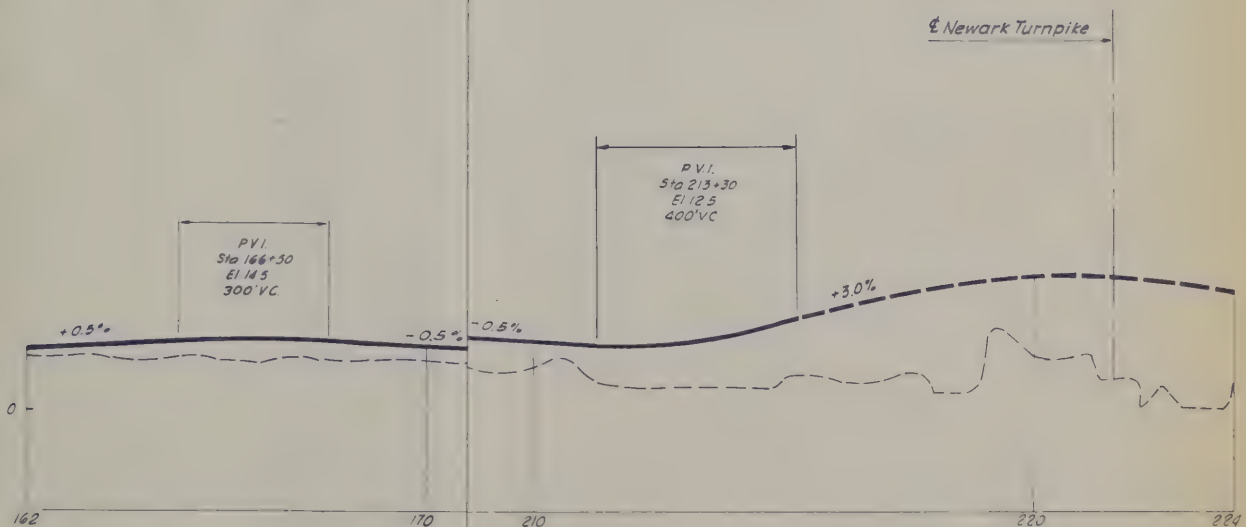
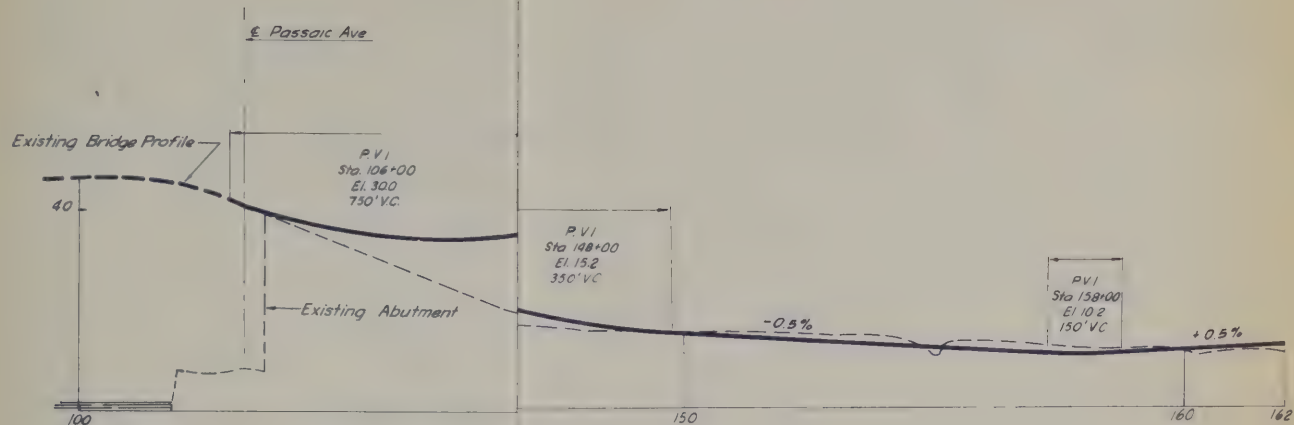
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CORRIDOR DETAILS

SCALE = 400'
DATE 966

DRAWING NO
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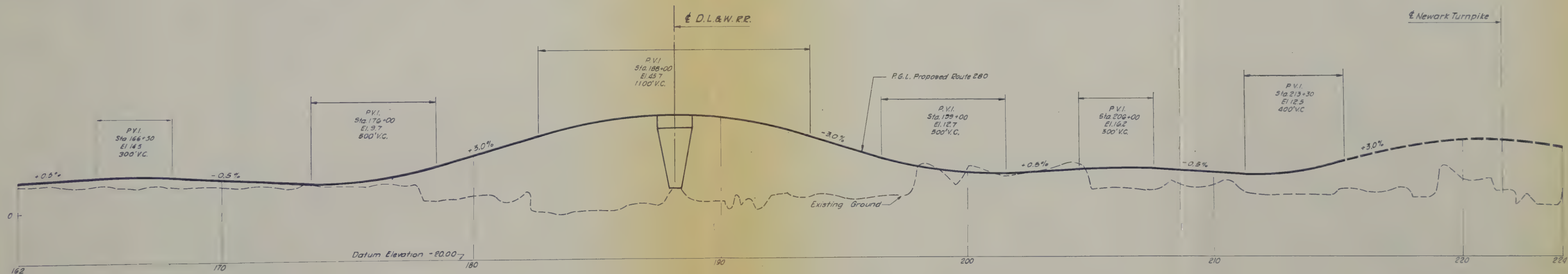
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INTERSTATE ROUTE 280 LOCATION REPORT
PROFILE OF "RED LINE"

SCALE: 1"=400' H. & 1"=40' V.
DATE: 1966

DRAWING NO.
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R PLAN SEE SHEETS 4, 5 & 6



RED LINE CORRIDOR

EMBANKMENT SCHEME
PREFERRED ALIGNMENT

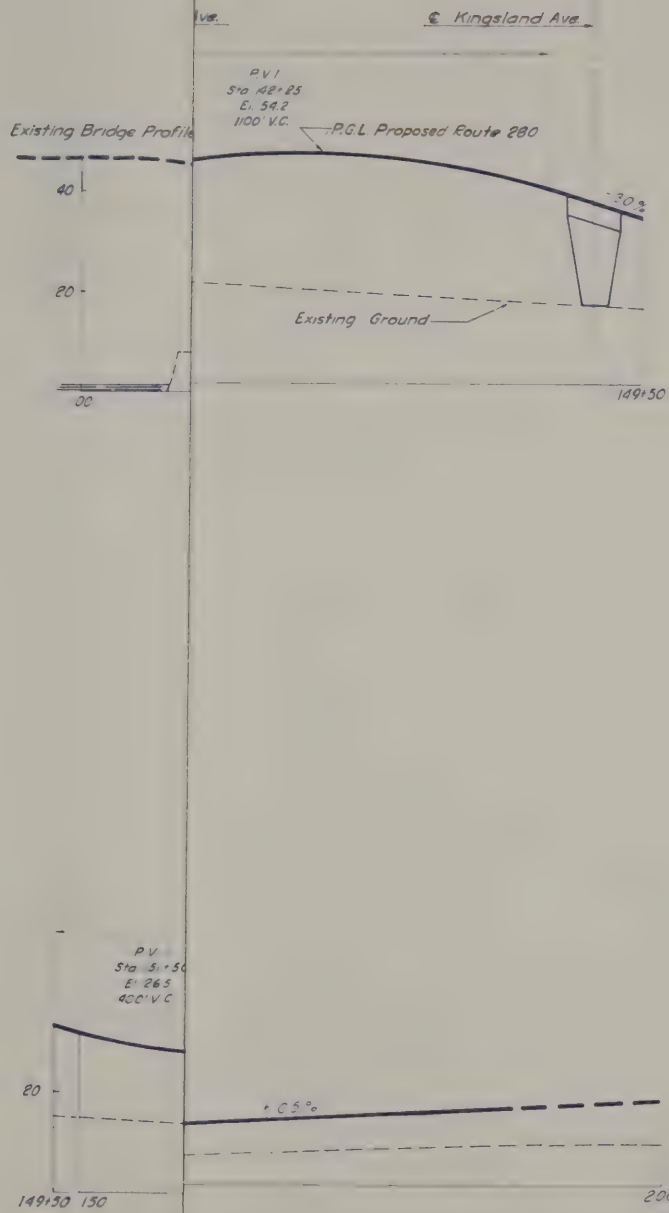
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PROFILE OF "RED LINE"

SCALE: 1"=400' H. & 1"=40' V.
DATE: 1966

DRAWING NO.
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FOR PLAN SEE SHEETS 4, 5 & 6



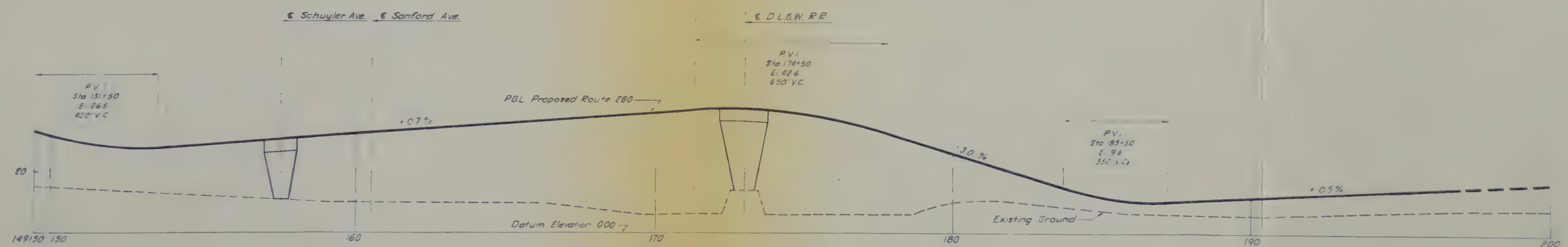
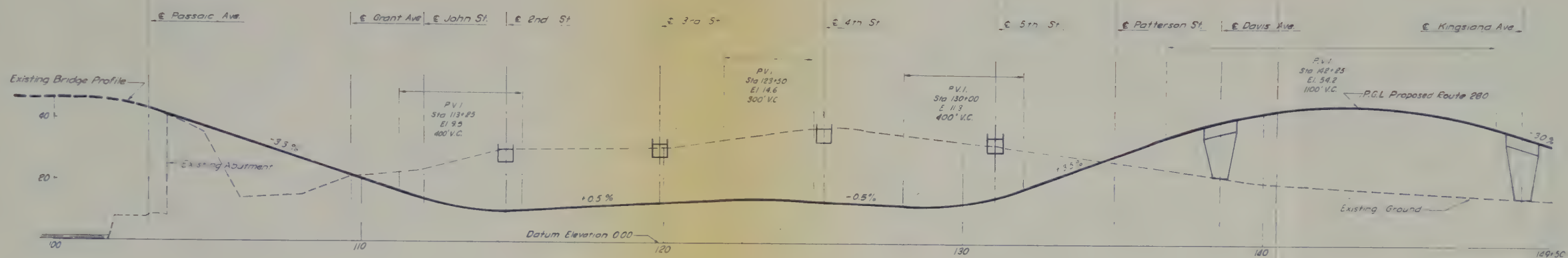
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INTERSTATE ROUTE 280 LOCATION REPORT
PROFILE OF "BLUE LINE"

SCALE 1"=400' H. & 1"=40' V.
DATE 1966

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BLUE LINE CORRIDOR

EXCAVATION SCHEME

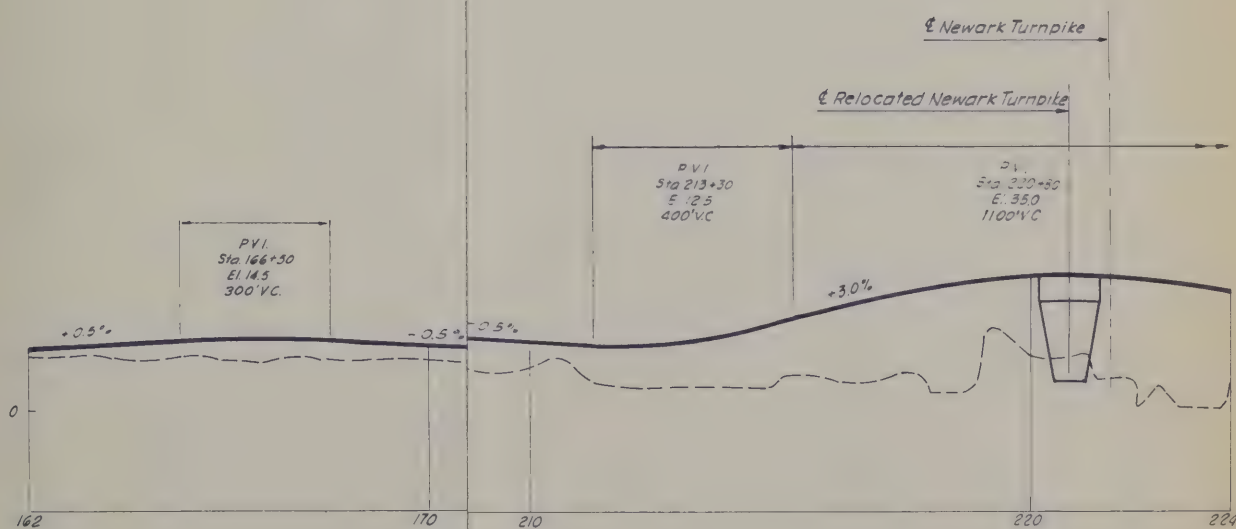
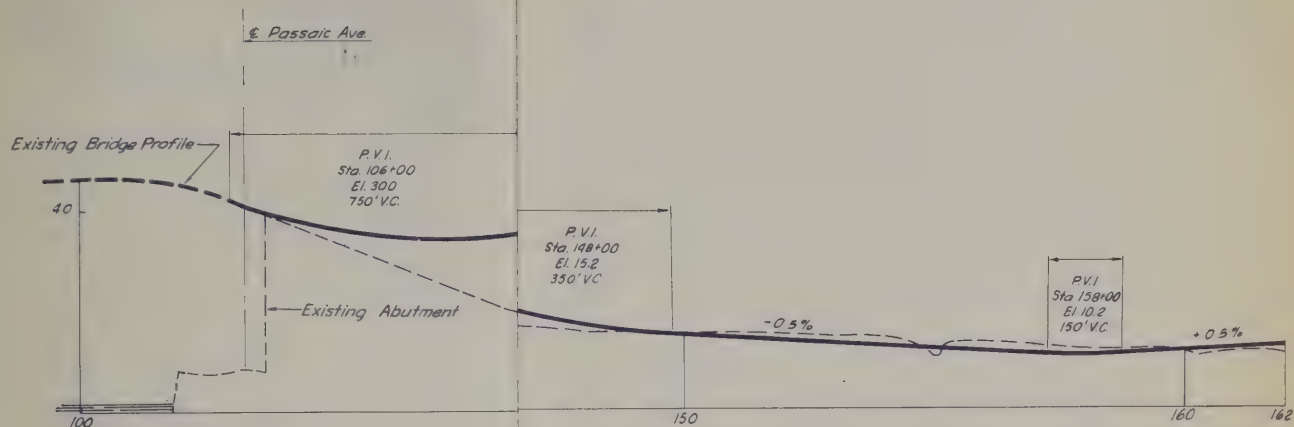
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PROFILE OF "BLUE LINE"

SCALE 1"=400' H. & 1"=40' V.
DATE 1966

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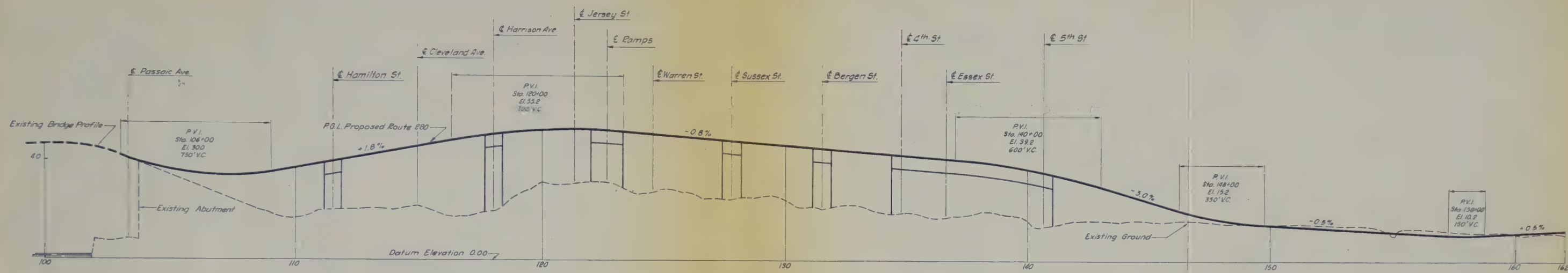
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PROFILE OF "RED LINE"

SCALE: 1"=400' H. & 1"=40' V.
DATE: 1966

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PLAN SEE SHEETS 10 & 11



RED LINE CORRIDOR

EMBANKMENT SCHEME
ADDITIONAL STUDIES

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PROFILE OF "RED LINE"

SCALE: 1"=400' H. & 1"=40' V.
DATE: 1966

DRAWING NO.
9

FOR PLAN SEE SHEETS 10 & 11

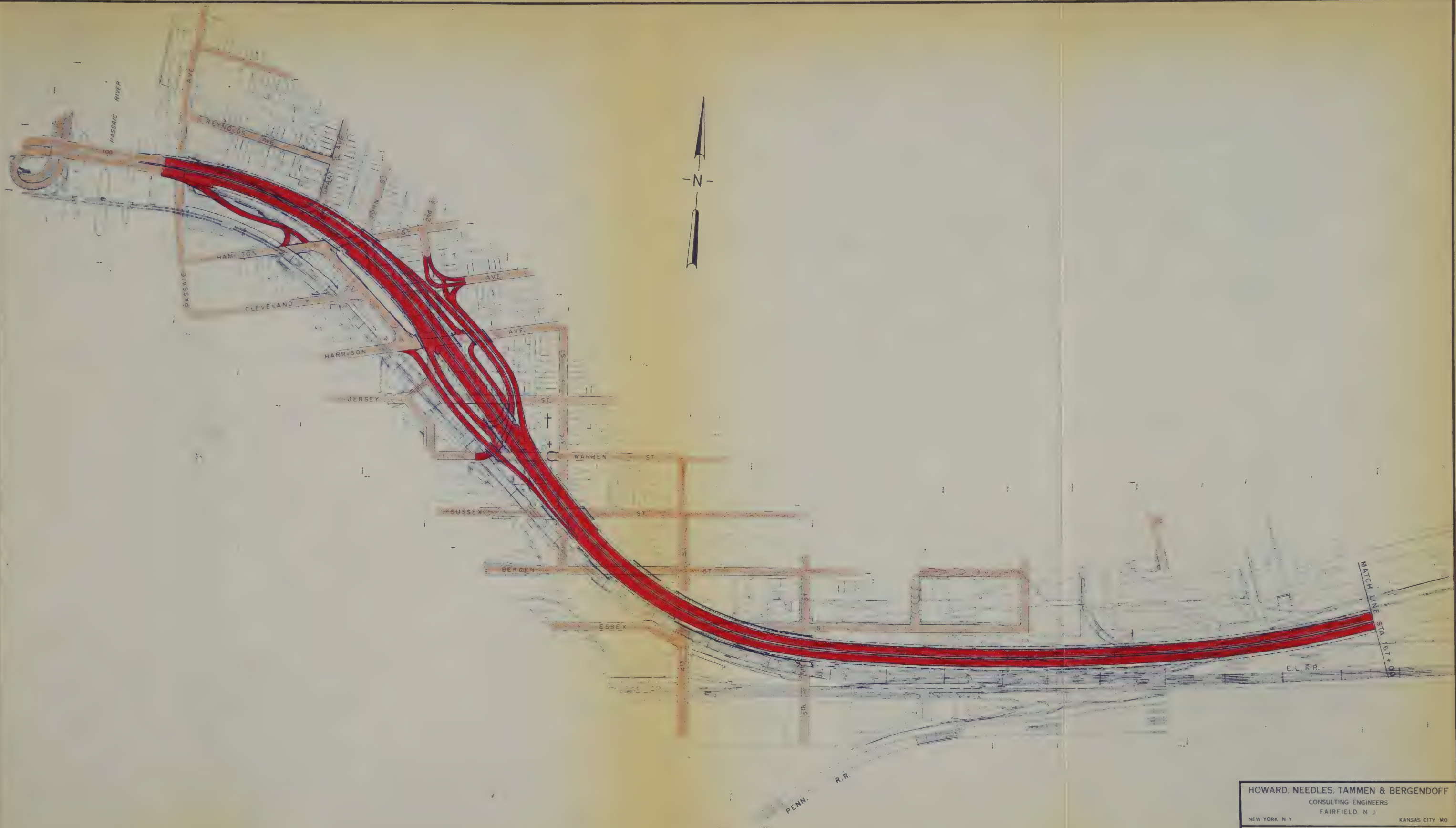


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PREFERRED CORRIDOR TOPOGRAPHY

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DATE 1966

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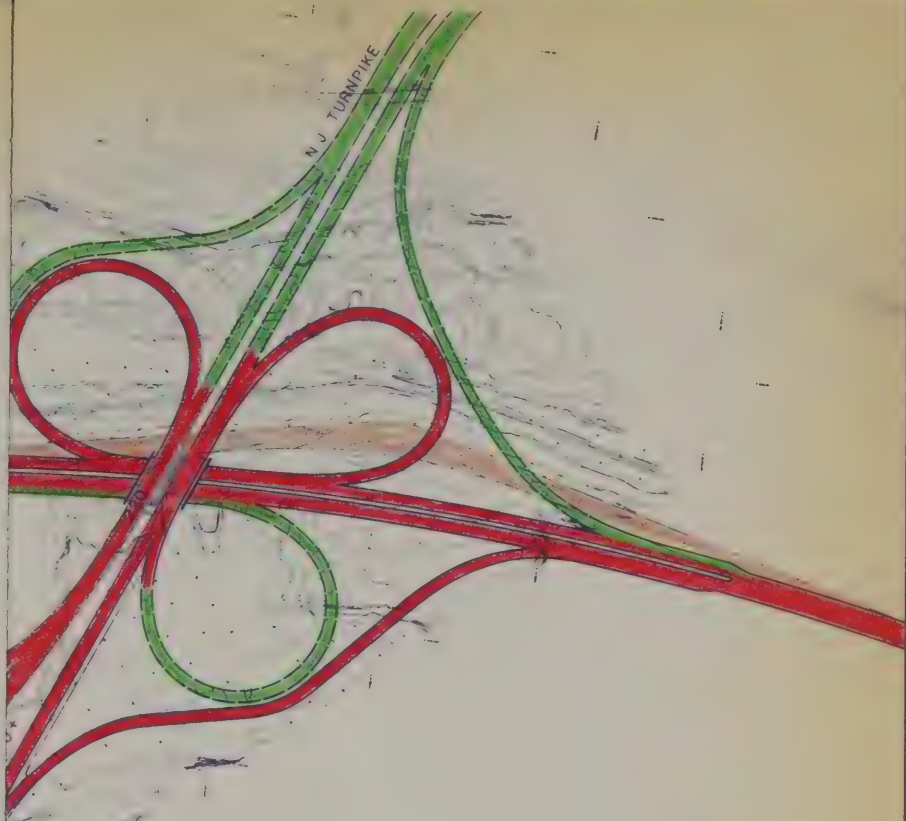


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SCALE 1" = 400'	DRAWING NO.
DATE 1966	10

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POSED CONSTRUCTION By N.J.S.D.T.
POSED CONSTRUCTION By N.J.T.A.

T OF PARTICIPATION SHOWN IS
L LIMITS TO BE DETERMINED.

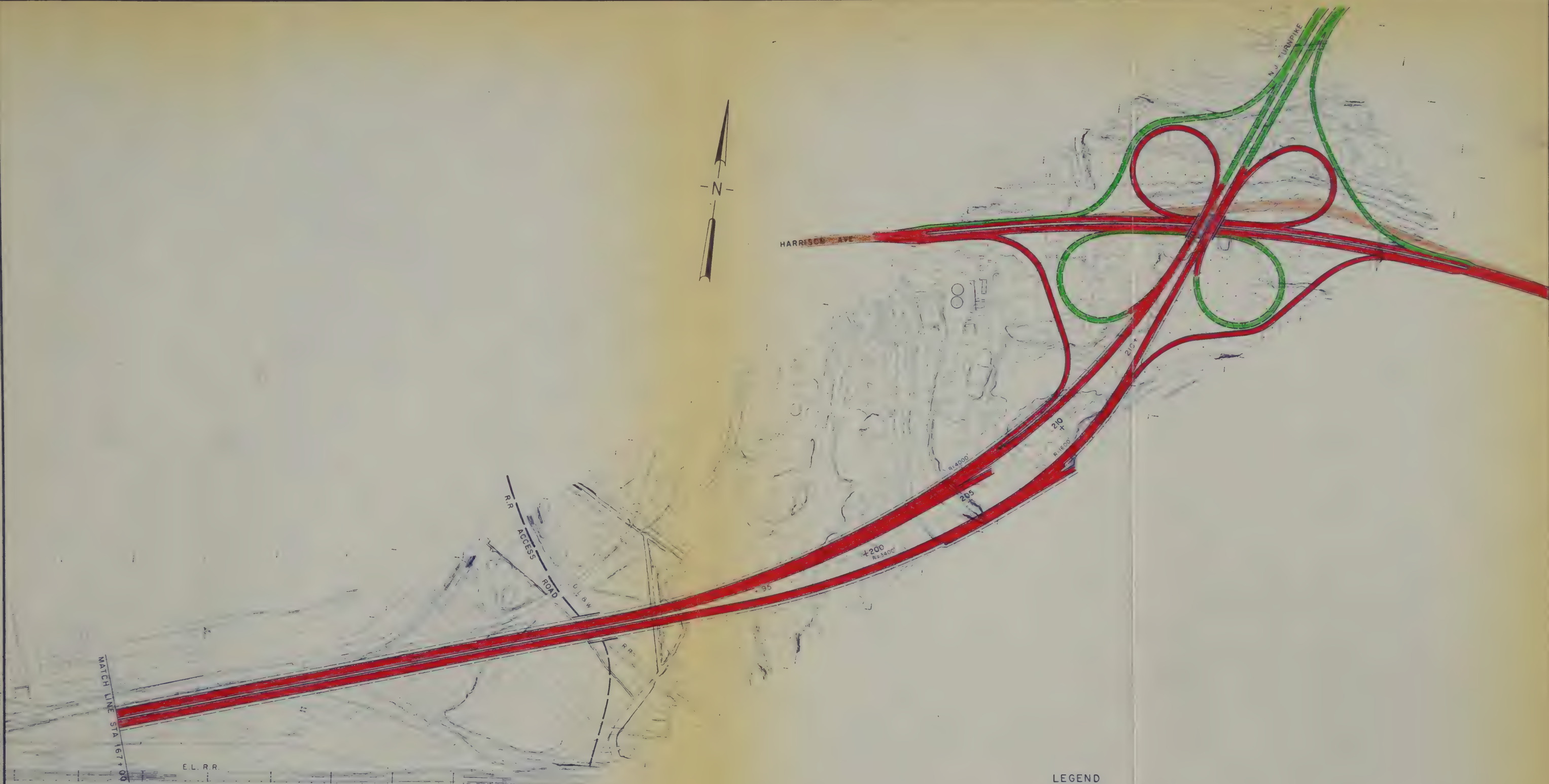
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PREFERRED CORRIDOR TOPOGRAPHY

SCALE 1" = 400'
DATE 1966

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LEGEND

- PROPOSED CONSTRUCTION By N.J.S.D.T.
- PROPOSED CONSTRUCTION By N.J.T.A.

NOTE :

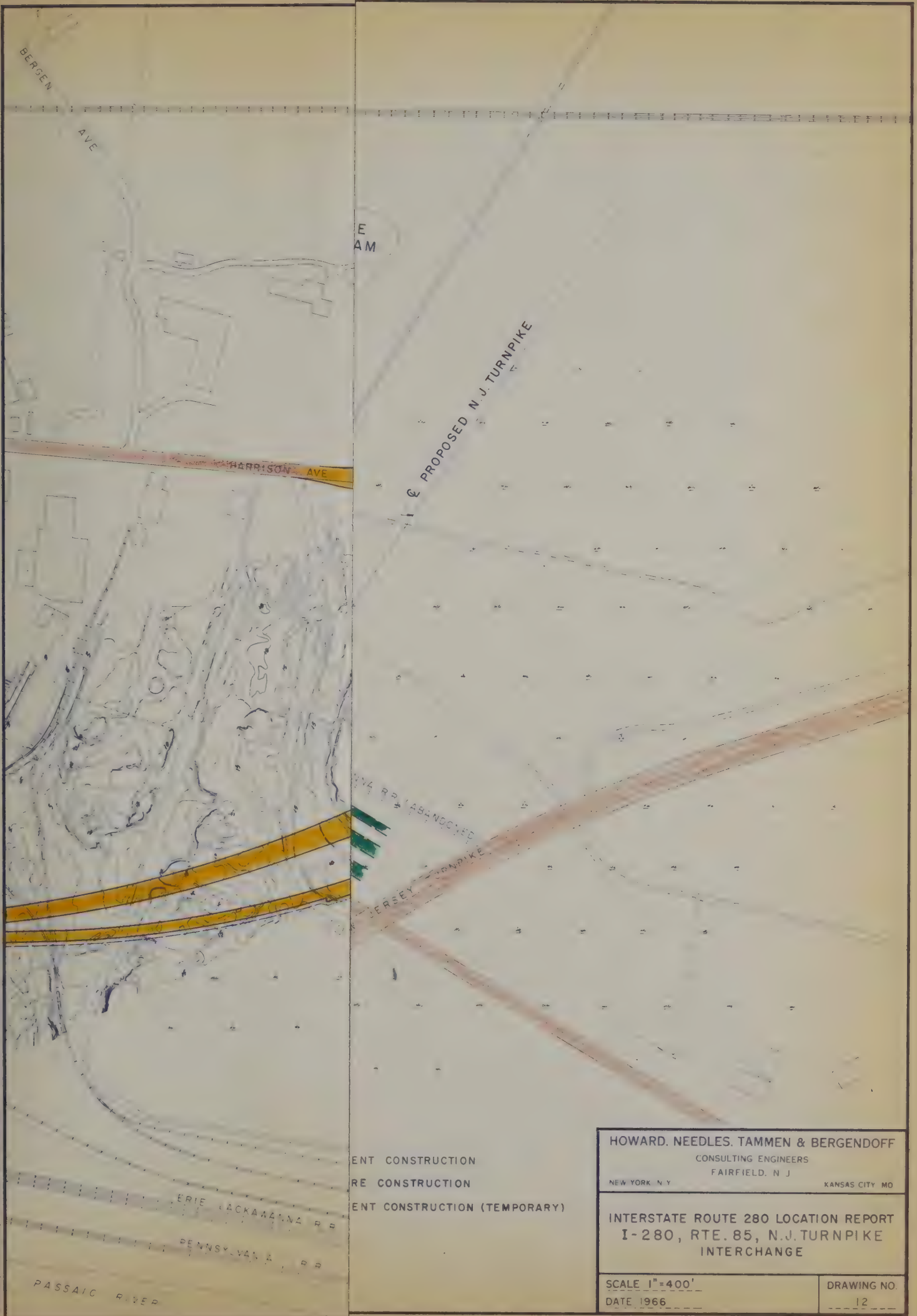
EXTENT OF PARTICIPATION SHOWN IS
APPROXIMATE. FINAL LIMITS TO BE DETERMINED.

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SCALE 1" = 400'
DATE 1966

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I-280, RTE. 85, N.J. TURNPIKE
INTERCHANGE

SCALE 1"=400'
DATE 1966

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I-280, RTE. 85, N.J. TURNPIKE
INTERCHANGE

SCALE 1"=400'
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INTERSTATE ROUTE 280 LOCATION REPORT	
SOILS MAP	
SCALE 1"=2000'	DRAWING NO.
DATE 1966	13



NOTE

All soil and geological information shown on this sheet taken from "Engineering Soils Survey of New Jersey, Report No. 4, Bergen and Hudson Counties," Report No. 2, Essex County and the New Jersey Geological Survey.

LEGEND

- GM-24ig— Glacial ground moraine, composed of unstratified sand and silts.
- GM-42i
 - Sh — Glacial ground moraine predominately unstratified sands and silts overlying
 - GM-42i bedrock at a shallow depth, generally 10' or less.
 - Sa
- GO-12i — Glacial outwash deposits composed mainly of stratified sand and gravel layers.
- MTM — Marine tidal marsh deposits consisting of very soft organic silt and peats, 5 to 20 feet thick overlying generally soft, varved silt and clay soils.
- R — Denotes areas having a mixture of soil conditions. The area is predominately stratified drift, glacial, till or recent alluvium. It is predominately sand with lesser amounts of gravel, silt, clay, and boulders. In the eastern areas it is overlain by thin organic deposits and man made fills.
- F — Designates area reclaimed by man made fills over the marine tidal marsh deposits (MTM). Below the surface fill they have the same soil characteristics.

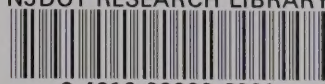
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SOILS MAP

SCALE 1"=2000'
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